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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DODDS, HAROLD E

ART UNIT	PAPER NUMBER
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2167

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,937

Applicant(s)

MERRELLS ET AL.

Examiner

Harold E. Dodds, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/15/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. ("The LDUP Replication Update Protocol") and van Hoff et al. (U.S. Patent No. 6,272,536).

3. Stokes renders obvious independent claim 1 by the following:
"...a supplier server..." at p. 3, sec. 4.
"...a consumer server in communication with the supplier server..." at p. 3, sec. 4.

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"...that manage replication of data contained within the directory server..." at p. 3, sec. 3.

"...from the supplier server to the consumer server..." at p. 3, sec. 4.

"...and a replica update vector..." at p. 6, sec. 5.2.

"...to synchronize the consumer server with respect to the supplier server..." at p. 2, sec. 3 and p. 3, sec. 4.

"...wherein replication of data is managed using the replica update vector..." p. 6, sec. 5.2.

Stokes does not teach the use of pluggable services and the determining of a minimal set of updates.

4. However van Hoff teaches the use of pluggable services and the determining of a minimal set of updates as follows:

"...a plurality of pluggable services..." col. 10, lines 62-63 and col. 2, lines 58-61, "...used to determine a minimal set of updates necessary..." at col. 8, lines 35-38 and col. 4, lines 48-52.

It would have been obvious to one of ordinary skill at the time of the invention to combine van Hoff with Stokes to provide pluggable services in order to provide access to update applications from a variety of sources. Likewise, it would have been obvious to one of ordinary skill at the time of the invention to combine van Hoff with Stokes to provide the determination of a minimal set of updates in order to reduce the amount of processing required and lower the cost of maintaining synchronized servers. Stokes and van Hoff have similar applications and use many technologies in common. Stokes and van Hoff teach

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the use of protocol, the use of servers, the updating of data, the use of directories, the use of numbers, and the use of vectors. Stokes provides consumer and supplier servers and replica update vectors and van Hoff provides pluggable services and the determining of a minimal set of updates.

5. As per claim 2, the "...replica update vector...", is taught by Stokes at p. 6, sec. 5.2 and the "...is persistently stored in a directory information tree...", is taught by van Hoff at col. 6, lines 16-18.

6. As per claim 4, the "...replica update vector comprises a change sequence number for each known replica...", is taught by Stokes at p. 6, sec. 5.2 and p. 9, sec. 5.3.2.2 and the "...and a description of a latest update received from a corresponding replica...", is taught by Stokes at p. 10, sec. 5.3.2.5 and p. 3, sec. 3.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes and van Hoff as applied to claim 1 above, and further in view of Wong et al. (U.S. Patent No, 6,353,834).

As per claim 3, the "...memory representation of the replica update vector...", is taught by Stokes at p. 7, sec. 5.3 and p. 6, sec. 5.2, but the "...comprises a change sequence number pending list...", is not taught by either Stokes or van Hoff.

However, Wong teaches the use of a change sequence number pending list as follows:

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"...These log records record changes to information in the preceding message block so that a complete history of changes to that particular message block are annotated..." at col. 8, lines 33-36.

"...As can be seen, in one embodiment, the header includes the number of segments in a queue file 122, the segment size 124, the QEMT sequence number or timestamp 126, the sequence number of the last log record in the previous segment 128, the current segment number 130, the queue head pointer 132, the queue tail pointer 134, the next available block in the current segment 136, the list of QEMT entries 138, the reservation table of disk blocks 140, the pending transaction list acting as coordinator 142 and the pending transaction list acting as participant 144..." at col. 9, lines 7-18.

It would have been obvious to one of ordinary skill at the time of the invention to combine Wong with Stokes and van Hoff to provide a change sequence number pending list in order to provide orderly coordination for the coming update. Stokes, van Hoff, and Wong have similar applications and use many technologies in common. Stokes, van Hoff, and Wong teach the use of protocol, the use of servers, the updating of data, and the use of numbers, Stokes and Wong teach the use of replication and the use of sequences, and van Hoff and Wong teach the use of computers, databases, and networks. Stokes consumer and supplier servers and replica update vectors, van Hoff provides pluggable services and the determining of a minimal set of updates, and Wong provides change sequence number pending lists.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes and van Hoff as applied to claim 1 above, and further in view of Huang et al. (U.S. Patent No, 6,393,434).

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As per claim 5, the "...replica update vector..." is taught by Stokes at p. 6, sec. 5.2,

but the "...is accessed through an application programming interface..." is not taught by either Stokes or van Hoff,

However, Huang teaches the accessing through an application programming interface as follows:

"...A handheld client (such as a Palm Pilot) can obtain a connection to a network (such as the Internet or a local area network (LAN)) by dialing up to a network remote access server through a modem, or by having a direct serial-port connection (e.g., using the Palm Pilot cradle) to a computer (e.g., a desktop PC) that is connected to the network 105..." at col. 7, lines 33-39.

"...The executable code used by the server 107 or the client 101 to communicate with the proxy 102 (or directly with the counterpart client of the server 107) for synchronization is referred to as a sync API (Application Program Interface) 206 (further described with respect to FIG. 13 below)..." at col. 8, lines 9-14.

It would have been obvious to one of ordinary skill at the time of the invention to combine Huang with Stokes and van Hoff to provide a change sequence number pending list in order to provide orderly coordination for the coming update. Stokes, van Hoff, and Huang have similar applications and use many technologies in common. Stokes, van Hoff, and Huang teach the use of protocol, the use of servers, the updating of data, the use of directories, the use of numbers, and the use of vectors, Stokes and Huang teach the use of replication, and van Hoff and Huang teach the use of computers, databases, and networks. Stokes consumer and supplier servers and replica update vectors,

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van Hoff provides pluggable services and the determining of a minimal set of updates, and Huang provides application program interfaces.

9. Claims 6, 7, 10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. ("The LDUP Replication Update Protocol") and Gehani et al. (U.S. Patent No. 6,098,078).

10. Stokes renders obvious independent claims 6 and 13 by the following:

"...from a consumer server..." at p. 3, sec. 4.

"...sending the replica update vector from the consumer server to a supplier server..." at p. 6, sec. 5.2.

"...of the consumer server with the replica update vector of the supplier server..." at p. 3, sec. 4 and p. 6, sec. 5.2.

"...from the supplier server as an update to the replica update vector of the consumer server..." at p. 3, sec. 4 and p. 6, sec. 5.2.

but the "...requesting a replica update vector...",

the "...comparing the replicate update vector...",

the "...and sending discrepancies of a comparison...",

and the "...if a discrepancy exists..." are not taught by Stokes.

11. However, Gehani teaches the use of requesting and comparing replicate update vectors and the use of discrepancies (conflicts) as follows;

"...Upon receiving an out-of-bound request for data item x_j , j sends the auxiliary copy x'_j (if it exists), or the regular copy x_j (otherwise), together with the corresponding IVV (auxiliary or regular)..." at col. 14, lines 11-14.

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"Given these facts, update propagation can be done by periodically comparing version vectors of pairs of data item replicas and either doing nothing (if both replicas have identical version vectors), or bringing the older replica up-to-date, or flagging a conflict..." col. 8, lines 51-55.

It would have been obvious to one of ordinary skill at the time of the invention to combine Gehani with Stokes to provide requesting and comparing replicate update vectors to determine whether two sets of updates are identical or different in order to have a fast means of comparing data and conserve processing time on the computer. Likewise, it would have been obvious to one of ordinary skill at the time of the invention to combine Gehani with Stokes to check for differences in data to determine which data items should be replaced in order maintain synchronism between databases on remote computer systems. Stokes and Gehani have similar applications and use many technologies in common. Stokes and Gehani teach the use of protocol, the use of servers, the updating of data, the use of sequences, the use of numbers, the use of vectors, and the use of sessions. Stokes provides consumer and supplier servers and replica update vectors and Gehani provides requesting and comparing replicate update vectors to determine whether two sets of replica are identical or different.

12. As per claim 12, the "...requesting a replica update vector..." is taught by Gehani at col. 14, lines 11-14 and col. 5, lines 51-55, the "...from a consumer server..." is taught by Stokes at p. 3, sec. 4, the "...sending the replica update vector from the consumer server to a supplier server..." is taught by Stokes at p. 6, sec. 5.2,

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the "...comparing the replica update vector...", is taught by Gehani at col. 5, lines 51-55,

the "...of the consumer server with the replica update vector of the supplier server...", is taught by Stokes at p. 3, sec. 4 and p. 6, sec. 5.2,

the "...sending discrepancies of a comparison...", is taught by Gehani at col. 5, lines 51-55,

the "...from the supplier server as an update to the replica update vector of the consumer server...", is taught by Stokes at p. 3, sec. 4 and p. 6, sec. 5.2,

the "...if a discrepancy exists...", is taught by Gehani at col. 5, lines 51-55,

the "...and exchanging the replica update vector...", is taught by Stokes at p. 11, sec. 5.4,

and the "...at the beginning of a replication session...", is taught by Stokes at p. 5, sec. 4.2.

In claim 12, the term "replace" is used to represent "exchange".

13. As per claim 7, the "...exchanging the replica update vector...", is taught by Stokes at p. 11, sec. 5.4 and the "...at the beginning of a replication session...", is taught by Stokes at p. 5, sec. 4.2.

In claim 7, the term "replace" is used to represent "exchange".

14. As per claim 10, the "...replica update vector comprises a change sequence number for each known replica...", is taught by Stokes at p. 6, sec. 5.2 and p. 9, section 5.3.2.2

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and the "...and a description of a latest update received from a corresponding replica...", is taught by Stokes at p. 10, sec. 5.3.2.5 and p. 2, sec. 3.

15. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes and Gehani as applied to claim 6 above, and further in view of van Hoff.

As per claim 8, the "...the replica update vector...", is taught by Stokes p. 6, sec. 5.2, but the "...is persistently stored in a directory information tree...", is not taught by either Stokes or Gehani.

However, van Hoff teaches the use of directory information trees as follows:

"...A channel index is a hierarchical tree data structure which can be stored in random access memory or in a persistent storage system..." at col. 6, lines 16-18.

It would have been obvious to one of ordinary skill at the time of the invention to combine van Hoff with Stokes and Gehani to provide requesting and comparing replicate update vectors to provide a tree structure to store data in order to use a conventional method of storing related data and gain acceptance of the system. Stokes, Gehani, and van Hoff have similar applications and use many technologies in common. Stokes, Gehani, and van Hoff teach the use of protocol, the use of servers, the updating of data, the use of numbers, and the use of vectors and Gehani and van Hoff teach the use of computers, the use of databases, and the use of networks. Stokes provides consumer and supplier servers and replica update vectors, Gehani provides requesting and comparing

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replicate update vectors to determine whether two sets of replica are identical or different, and van Hoff provides trees to store the replica data.

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes and Gehani as applied to claim 6 above, and further in view of Wong.

As per claim 9, the "...memory representation of the replica update vector...", is taught by Stokes at p. 7, sec. 5.3 and p. 6, sec. 5.2, but the "...comprises a change sequence number pending list...", is not taught by either Stokes or Gehani.

However, Wong teaches the use of a change sequence number pending list as follows:

"...These log records record changes to information in the preceding message block so that a complete history of changes to that particular message block are annotated..." at col. 8, lines 33-36.

"...As can be seen, in one embodiment, the header includes the number of segments in a queue file 122, the segment size 124, the QEMT sequence number or timestamp 126, the sequence number of the last log record in the previous segment 128, the current segment number 130, the queue head pointer 132, the queue tail pointer 134, the next available block in the current segment 136, the list of QEMT entries 138, the reservation table of disk blocks 140, the pending transaction list acting as coordinator 142 and the pending transaction list acting as participant 144..." at col. 9, lines 7-18.

It would have been obvious to one of ordinary skill at the time of the invention to combine Wong with Stokes and Gehani to provide a change sequence number pending list in order to provide orderly coordination for the coming update. Stokes, Gehani, and Wong have similar applications and use

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many technologies in common. Stokes, Gehani, and Wong teach the use of protocol, the use of servers, the updating of data, the use of replication, the use of numbers, and the use of sequences and Gehani and Wong teach the use of computers, the use of databases, and the use of networks. Stokes provides consumer and supplier servers and replica update vectors, Wong provides requesting and comparing replicate update vectors to determine whether two sets of replica are identical or different, and Wong provides change sequence number pending lists.

17. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes and Gehani as applied to claim 6 above, and further in view of Huang.

As per claim 11, the "...replica update vector..." is taught by Stokes at p. 6, sec. 5.2,

but the "...is accessed through an application programming interface..." is not taught by either Stokes or Gehani,

However, Huang teaches the accessing through an application programming interface as follows:

"...A handheld client (such as a Palm Pilot) can obtain a connection to a network (such as the Internet or a local area network (LAN)) by dialing up to a network remote access server through a modem, or by having a direct serial-port connection (e.g., using the Palm Pilot cradle) to a computer (e.g., a desktop PC) that is connected to the network 105..." at col. 7, lines 33-39.

"...The executable code used by the server 107 or the client 101 to communicate with the proxy 102 (or directly with the counterpart client of the server 107) for synchronization is referred to as a sync API (Application

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Program Interface) 206 (further described with respect to FIG. 13 below)..." at col. 8, lines 9-14.

It would have been obvious to one of ordinary skill at the time of the invention to combine Huang with Stokes and Gehani to provide a change sequence number pending list in order to provide orderly coordination for the coming update. Stokes, Gehani, and Huang have similar applications and use many technologies in common. Stokes, Gehani, and Huang teach the use of protocol, the use of servers, the updating of data, the use of replication, the use of numbers, and the use of vectors and Gehani and Huang teach the use of computers, the use of databases, and the use of networks. Stokes provides consumer and supplier servers and replica update vectors, Wong provides requesting and comparing replicate update vectors to determine whether two sets of replica are identical or different, and Huang provides application program interfaces.

Response to Arguments

18. Applicants' arguments filed 21 September 2004 have been fully considered but they are not persuasive. In the first argument for independent claim 1 on page 3, paragraph 3, the Applicants state:

"Further, van Hoff does not disclose or suggest determining a minimal set of updates as asserted by the Examiner. Rather, van Hoff discloses reducing the size of a request for an update. Specifically, van Hoff discloses an optimized update request that is obtained by replacing the channel index by a checksum of the channel index, which enables the update request to become smaller in size (col. 8, 11. 35-38). This is significantly different than determining a minimal number of updates that are necessary to bring a consumer server up-to-date with respect to a supplier server, as recited in independent claim 1."

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The Examiner disagrees. Van Hoff teaches the concept of a minimal amount and the use of updates at col. 8, lines 35-38 and teaches the use of a set of data at col. 4, lines 48-52. Since updates are data these combined teachings suggest the use of a set of data and when viewed with the concept of a minimal amount these combined teachings suggest the determination of a minimal set of data.

19. In the second argument for claims 2-5 on page 4, paragraph 1, the Applicants state:

"In view of the above, Stokes and van Hoff, whether considered separately or in combination, do not render the present invention, as recited in claim 1, obvious. Thus, claim 1 is patentable over Stokes and van Hoff. Dependent claims 2-5 are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested."

The Examiner disagrees. Since the response to the first argument shows that independent claim 1 is still rendered obvious, claims 2-5 depend on claim 1, and no additional arguments have been provided for claims 2-5, then claims 2-5 are still rendered obvious.

20. In the third argument for independent claims 6 and 13 on page 4, paragraph 3, the Applicants state:

"In contrast to the present invention, Gehani discloses that an out-of-bound request is received. An out-of-bound request represents data items obtained by direct copying, outside the normal update propagation procedure of Gehani (col. 14, 11. 7-10). Specifically, an update vector contains the state of a replica of information in a directory server with respect to other replicas. The update vector is used to compare the information between two servers and update the information so that both servers have the same information. Therefore, the out-of-bound request disclosed in Gehani cannot specifically be a request for an update vector because the request is for data directly copied from a server and not a request to update information relative to information contained in another server."

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The Examiner disagrees. Gehani teaches the receiving of requests at col. 14, lines 11-14 and the use of version vectors at col. 8, lines 51-55. When these two teachings are combined they suggest the receiving of requests for version vectors. Stokes teaches the use of replicate update vectors at p. 6, sec. 5.2. When the combined teachings of Gehani are viewed in the light of the teaching of Stokes of replicate update vectors the combined teachings suggest the requesting of a replicate update vector.

21. In the fourth argument for claims 7-11 and independent claim 12 on page 5, paragraph 1, the Applicants state:

"In view of the above, Stokes and Gehani, whether considered separately or in combination, do not disclose or suggest each and every element of independent claims 6 and 13. Therefore, independent claims 6 and 13 are patentable over Stokes and Gehani. Further, independent claim 12 includes similar subject matter (i.e., "requesting a replica update vector") and is patentable over Stokes and Gehani for the same reasons noted above. Dependent claims 7-11 are patentable for at least the same reasons."

The Examiner disagrees. Since the response to the third argument shows that independent claim 6 is still rendered obvious, claims 7-11 depend on claim 6, and no additional arguments have been provided for claims 7-11, then claims 7-11 are still rendered obvious. Likewise, since the argument for independent claim 12 is a restatement of the third argument for independent claims 1 and 13 then independent claim 12 is also rendered obvious.

Conclusion

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harold E. Dodds, Jr. whose telephone number is (571)-272-4110. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on (571)-272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Harold E. Dodds, Jr.
Patent Examiner
January 21, 2005



CHETA ROBINSON
PRIMARY EXAMINER